

Figure 61. View East of Site 21285 Lava Tube Entrance

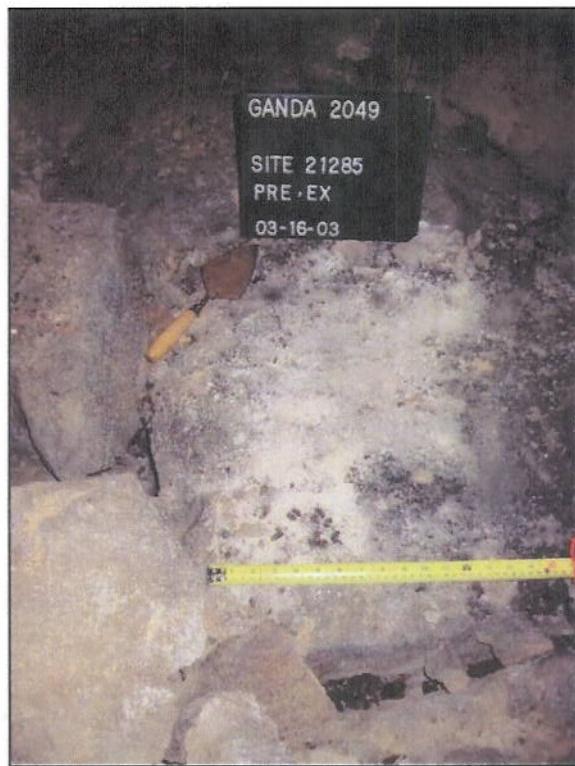


Figure 62. Site 21285; Feature 1 Hearth



**Figure 63. Site 21285 Lava Tube Interior and Feature 2 Paving**

<b>Site 50-10-31-21299</b>		<b>GANDA Site:</b>	901
<b>Site Type:</b>	Lava tube	<b>Training Area:</b>	Impact
<b>Function:</b>	Limited-use occupation		
<b>Possible age:</b>	AD 1520-1810		
<b>No. of Features:</b>	1		
<b>Site Size:</b>	25.0 m x 12.0 m (0.002 hectare)		
<b>Cultural Material:</b>	Bird bone, grass matting, heart, charred sticks		
<b>Condition:</b>	Fair; cave floor impacted by ungulates		
<b>Significance:</b>	D: <i>Information potential</i> ; site yields important scientific data regarding Hawaiian occupation and resource exploitation in the Saddle Region.		
<b>Historic Context:</b>	Traditional Hawaiian occupation (ca. AD 780-Contact)		
<b>Recommendation:</b>	Avoidance and protection during all SBCT-related projects.		

**Description:** Site 21299 is a lava tube situated in a weathered *pāhoehoe* flow (designated klo) roughly 30 m east of a dominant *a'ā* lava flow (designated k4). Excavated *pāhoehoe* pits associated with a larger complex of similar features (Site 23463) are in the vicinity of the site.

The lava tube is relatively small and accessed through the south side of a roughly 1.5 m<sup>2</sup> sink (Figures 64 and 65). The main chamber is aligned in a north-south direction and extends south of the entrance for 25.0 m. The light zone portion of the main chamber, extending roughly 6 m from the entrance, contains a paved area (roughly 2.0 m by 1.0 m) of flat *pāhoehoe* stones overlain by a remnant grass mat. Two partly burned *naio* sticks are within the entrance of the tube on the south side of an ash deposit.

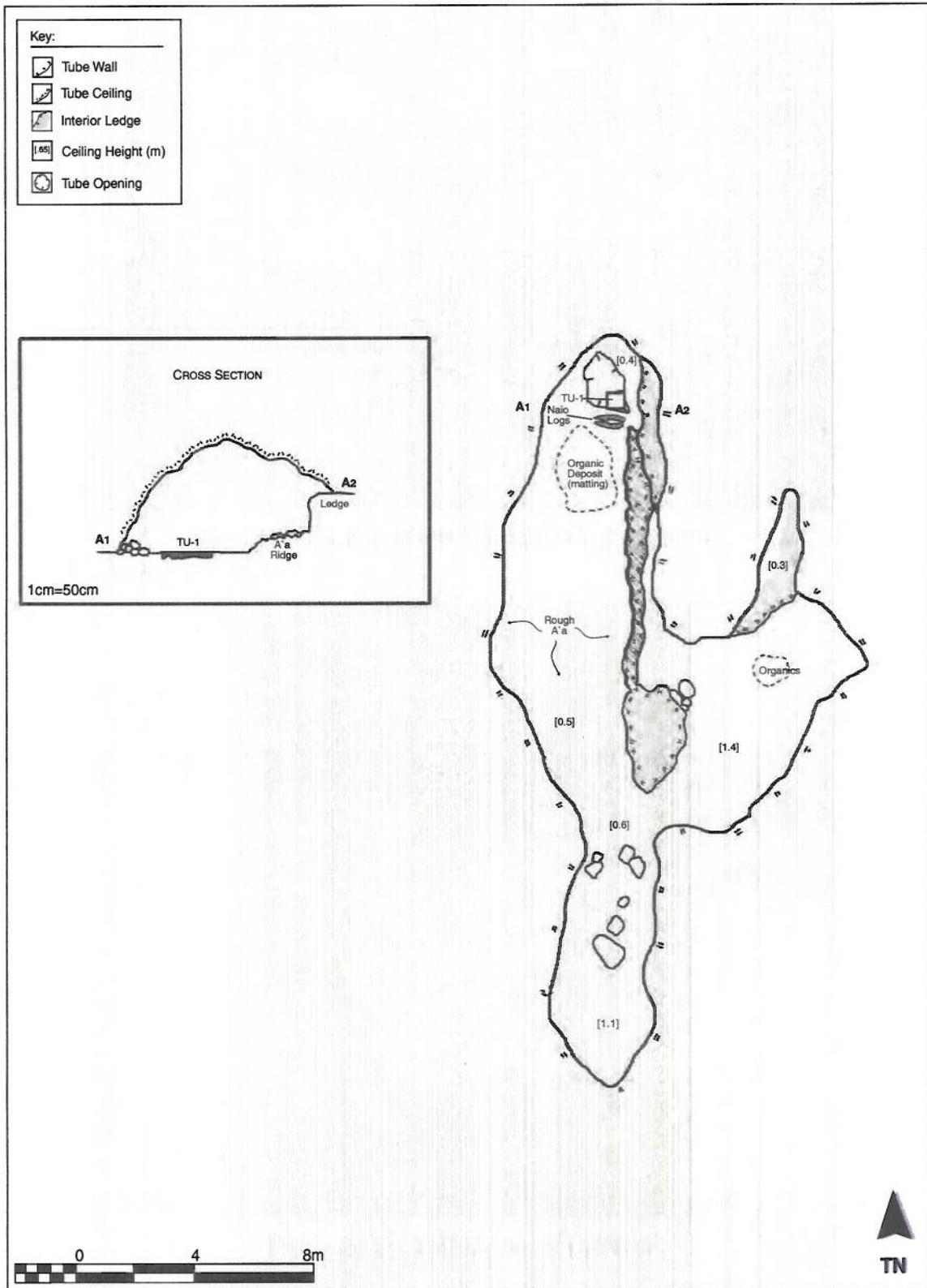


Figure 64. Site 21229 Planview and Cross Section.



**Figure 65. Site 21299 Entrance, View South**

A second chamber, accessed at two junctures on the east side of the main chamber, opens up into a maximum 6.0 m square room with a 1.4 m high ceiling. A concentration of organic material was observed on the floor of the second chamber. Bird bones were scattered along the east side of the main chamber and on the west side of the second chamber. Some of the skeletons are articulated and likely represent natural deaths while nesting in the tube. The organic material in the second chamber might represent bird nesting material.

#### **Testing Results:**

A 0.5 m by 0.5 m unit (TU1) was excavated in the entrance of the tube over a shallow ash deposit (Figures 66 and 67). The unit was excavated to a maximum depth of 7 cmbs, and was terminated at bedrock. The ash, designated SF 1, comprised the entire excavation and is described as follows:

SF 1        (4-7cm thick) grayish brown (10 YR 5/2) ash; structureless; loose, non-coherent, non-sticky, non-plastic; few rootlets; cultural material present.

The feature yielded bird bone, including 0.1 gm of small procellariid, 1.3 gms of medium procellariid, 0.3 gm of Hawaiian Petral (*Pterodroma phaeopygia*), and 4.2 gms of medium bird. Charcoal (32.8 gms) and a bulk charcoal-ash sample (353.2 gms) were also collected.

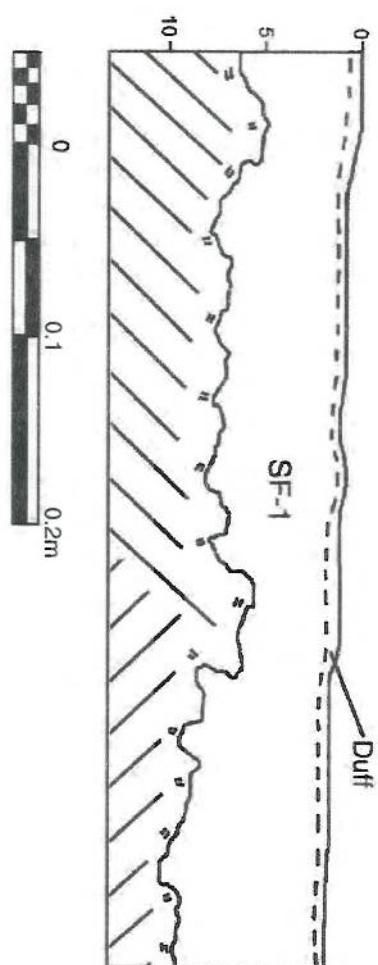
Two charcoal samples from SF1 representing two Native wood species (*naio* and *pukiawe*) were submitted to Beta Analytic for radiocarbon analysis. The samples produced similar calibrated (2  $\sigma$ ) multiple date ranges:

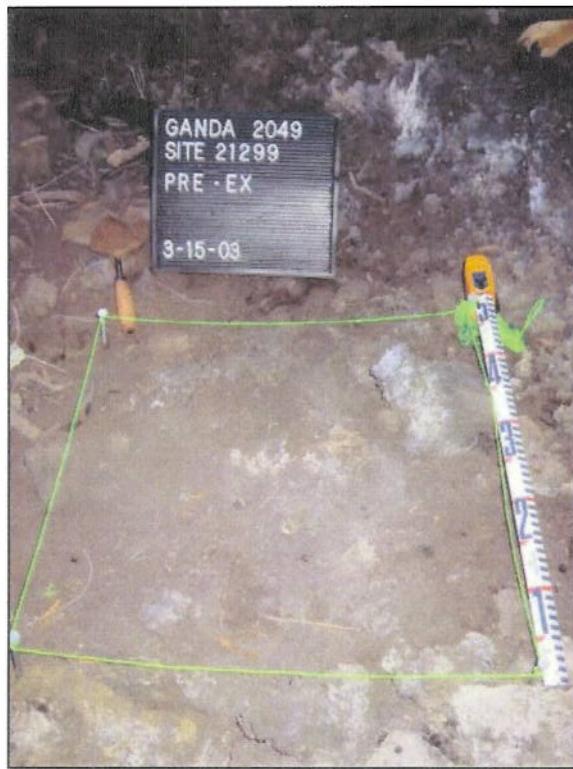
- A.D. 1520 - 1590; A.D. 1620 - 1670; A.D. 1770 - 1800; and A.D. 1940 - 1950.
- A.D. 1520 - 1580; A.D. 1630 - 1690; A.D. 1730 - 1810; and A.D. 1920 - 1950

#### **Discussion**

The Site 21299 excavation identified a hearth located in the protected and well-lit entrance of the lava tube. The hearth deposit was shallow suggesting limited-use and associated cultural material

Figure 66. Site 21299; North Profile





**Figure 67. Site 21299, TU1 Pre-Excavation**

indicates birds, both small and medium procellariid and Hawaiian Petral, were consumed at the site. Although the hearth produced multiple calibrated dates ranging into the post-Contact period, the absence of non-traditional (Western) materials suggests the site was utilized during the pre-Contact or early post-Contact era, or 16<sup>th</sup> to early 19<sup>th</sup> centuries.

<b>Site 50-10-31-23463</b>	<b>GANDA Site No:</b> 690, 692-702
<b>Site Type:</b> Excavated pit complex	<b>Training Area:</b> Impact
<b>Function:</b> Possible bird nesting	
<b>Possible age:</b> Pre-Contact	
<b>No. of Features:</b> 12 (representing 68 pits)	
<b>Site Size:</b> Roughly 2,300 m x 1,500 m (0.01 hectare)	
<b>Cultural Material:</b> None	
<b>Condition:</b> Fair	
<b>Significance:</b> D: Information potential; site yields important information regarding location, methods and frequency of possible bird hunting in Saddle.	
<b>Recommendation:</b> Avoidance and protection during all SBCT-related projects.	

**Description:** Site 23463 is composed of 12 features, each incorporating one or more excavated *pāhoehoe* pits, representing a total of 68 individual pits. The excavated pit complex is located on the klo lava flow formed between 5,000 to 10,000 years ago. The pit features are tentatively classified as bird hunting pits created by pre-Contact Hawaiians to expand the nesting areas and

to access bird nests in otherwise unreachable caverns in the lava. The 68 pits are combined under a single site number based on their similar location on the k2 flow and general location within the AALFTR.

Four representative pits or pit clusters (Features 8, 9, 11, and 12) were measured and mapped to scale (Figures 68-74). Table 14 below provides a summary of these features.

**Table 14. Site 23463 Feature Summary**

Feature No	Previous GANDA Site	No of Pits	Size
1	690	20	250 m <sup>2</sup>
2	692	10	50 m
3	693	1	1 m <sup>2</sup>
4	694	7	50 m <sup>2</sup>
5	695	4	50 m <sup>2</sup>
6	696	2	10 m <sup>2</sup>
7	697	5	40 m <sup>2</sup>
8	698	4	25 m <sup>2</sup>
9	699	1	1 m by 2 m
10	700	10	30 m
11	701	2	40 m <sup>2</sup>
12	702	2	1 m by 4 m

Site 50-10-31-23464	GANDA Site No:	902
<b>Site Type:</b>	Lava tube	<b>Training Area:</b> Impact
<b>Function:</b>	Limited-use occupation	
<b>Possible age:</b>	Pre-Contact	
<b>No. of Features:</b>	1	
<b>Site Size:</b>	50 m x 10 m (0.004 hectare)	
<b>Cultural Material:</b>	bird bone	
<b>Condition:</b>	Fair; cave floor impacted by ungulates	
<b>Significance:</b>	D: <i>Information potential</i> ; site yields important scientific data regarding Hawaiian occupation and resource exploitation in the Saddle Region.	
<b>Historic Context:</b>	Traditional Hawaiian occupation ( <i>ca.</i> AD 750-Contact)	
<b>Recommendation:</b>	Avoidance and protection during all SBCT-related projects.	

**Description:** Site 23464 is a lava tube roughly 300 m west of Redleg Trail. The site is in pāhoehoe lava that appears to be associated with the k3 flow, formed 750 to 1,500 years ago. The lava tube contains two main tubes or chambers extending west and southeast of a large pāhoehoe sink; the sink is 15 m long by 10 m wide by 4 m deep (Figures 75 and 76). Goat droppings were observed throughout the site area and were particularly plentiful in the western chamber. Cultural material and a possible hearth were recorded in the southeastern chamber of the lava tube.

The southeastern chamber extends 10.0 m southeast of the sink and is accessed through a narrow 1.0-m-high entry that descends 4.0 m down to a level soil floor. This chamber is relatively dark because of the small entry and measures 6.0 m by 8.0 m with a 1.8 m maximum ceiling height. A 1.0 by 2.0 m ash and charcoal concentration was in a dimly lit area at the base of the sloped entryway. Bird bone and a goat skull were observed on the floor of the inner chamber, but not collected. The chamber on the southeast side of the sink extends 20.0 m to the southeast and is

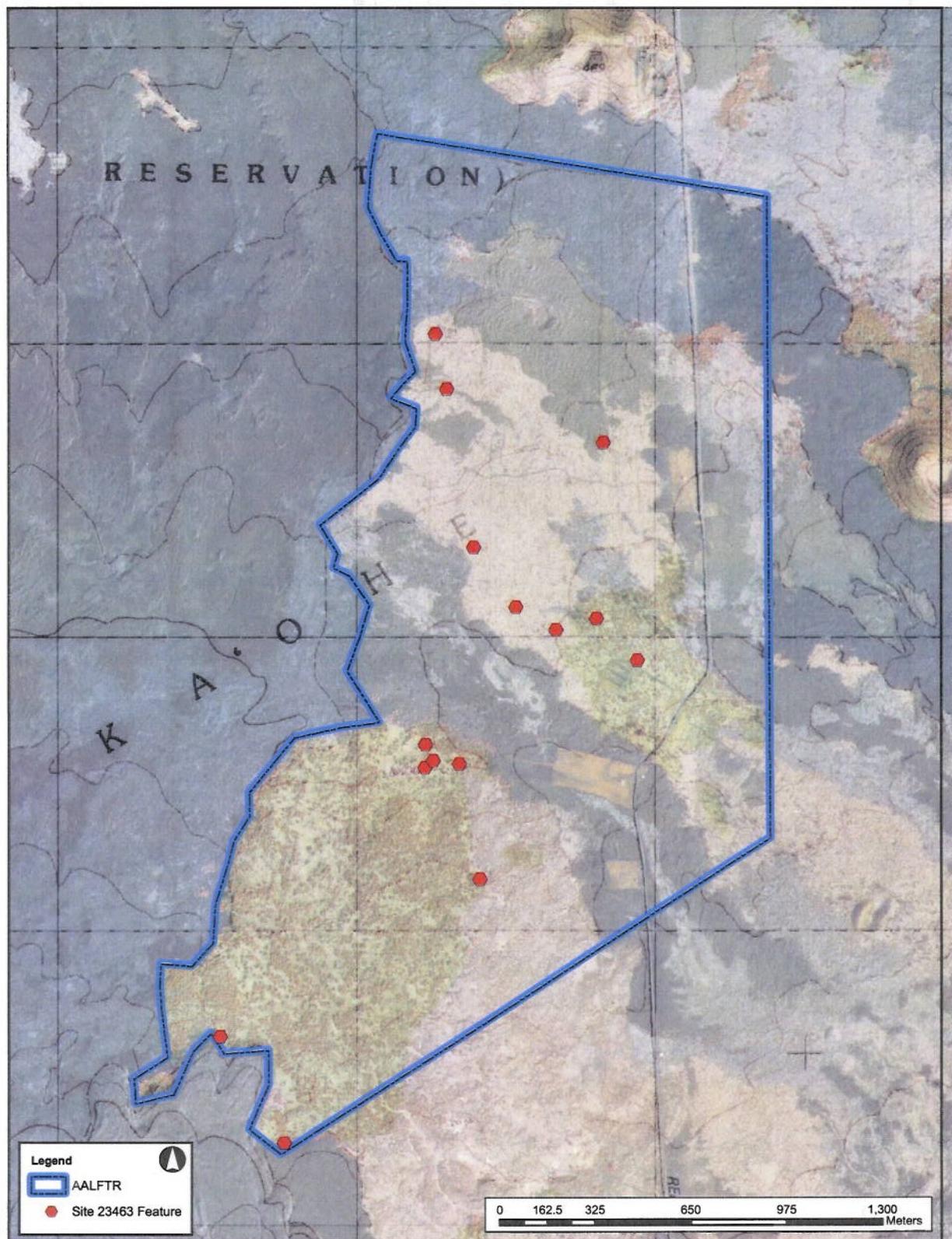


Figure 68. Site 23463; Distribution of Excavated Pits on Orthophoto and USGS Quadrangle

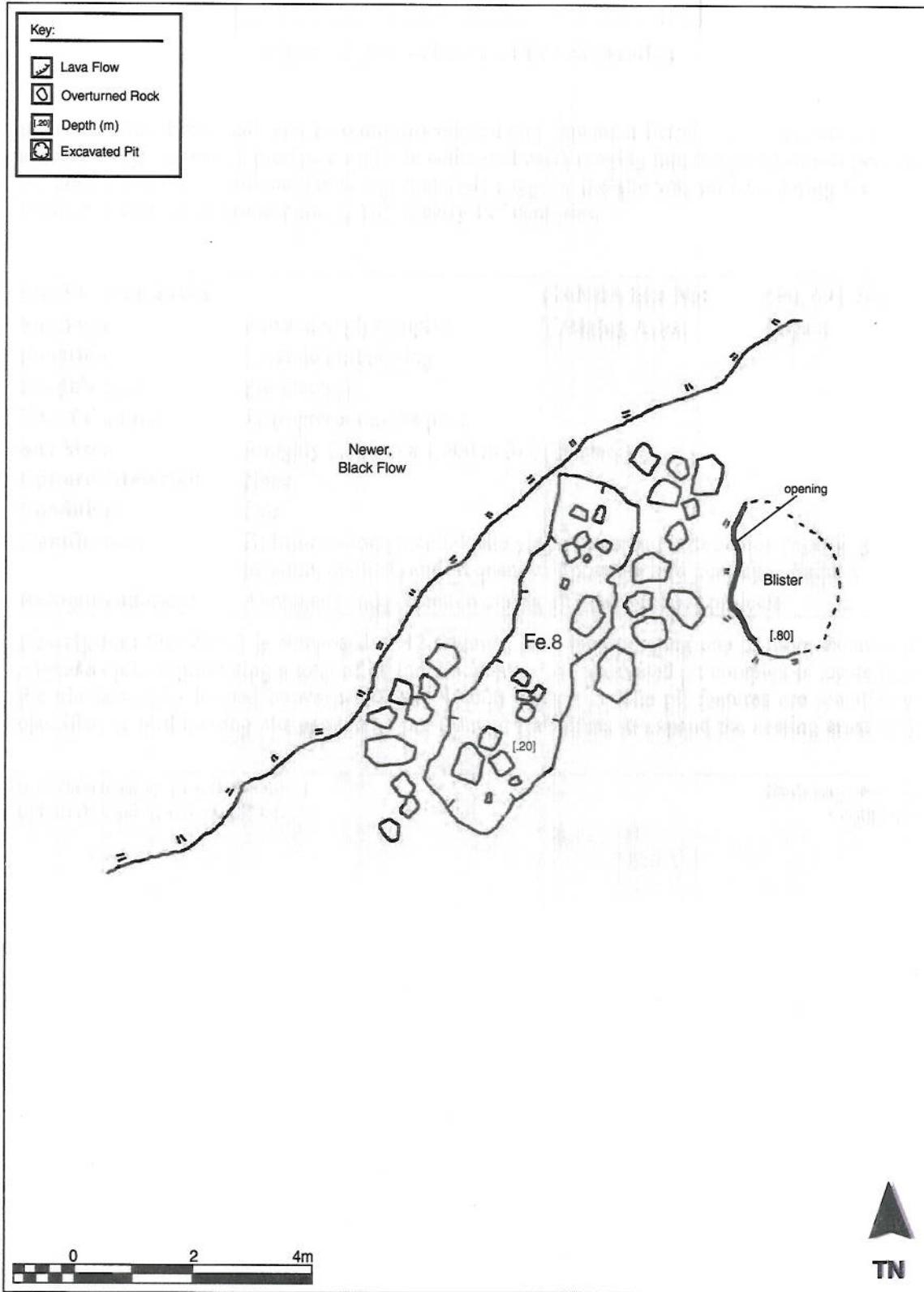


Figure 69. Site 23463 Feature 8; Plan View

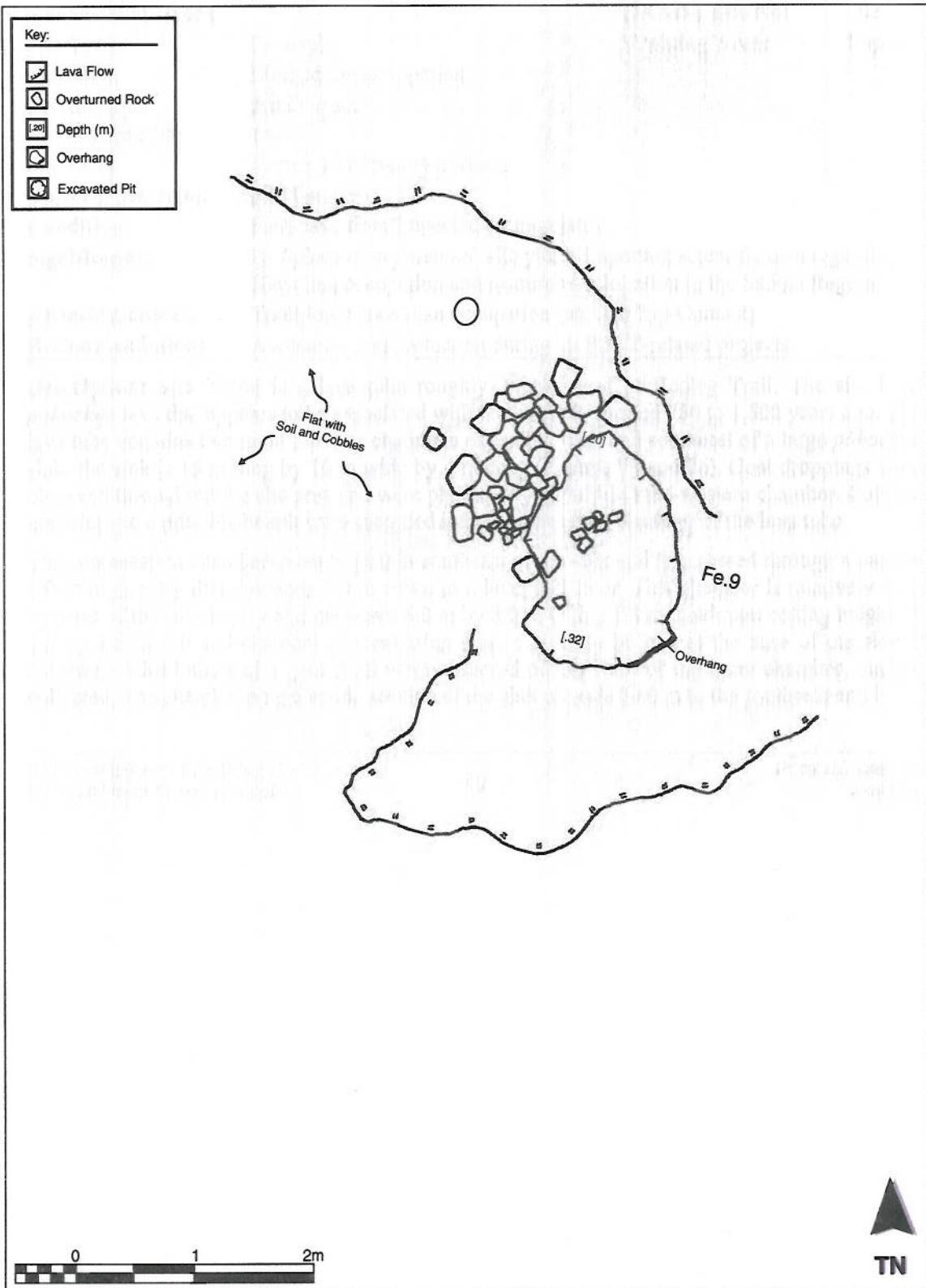


Figure 70. Site 23463 Feature 9; Plan View

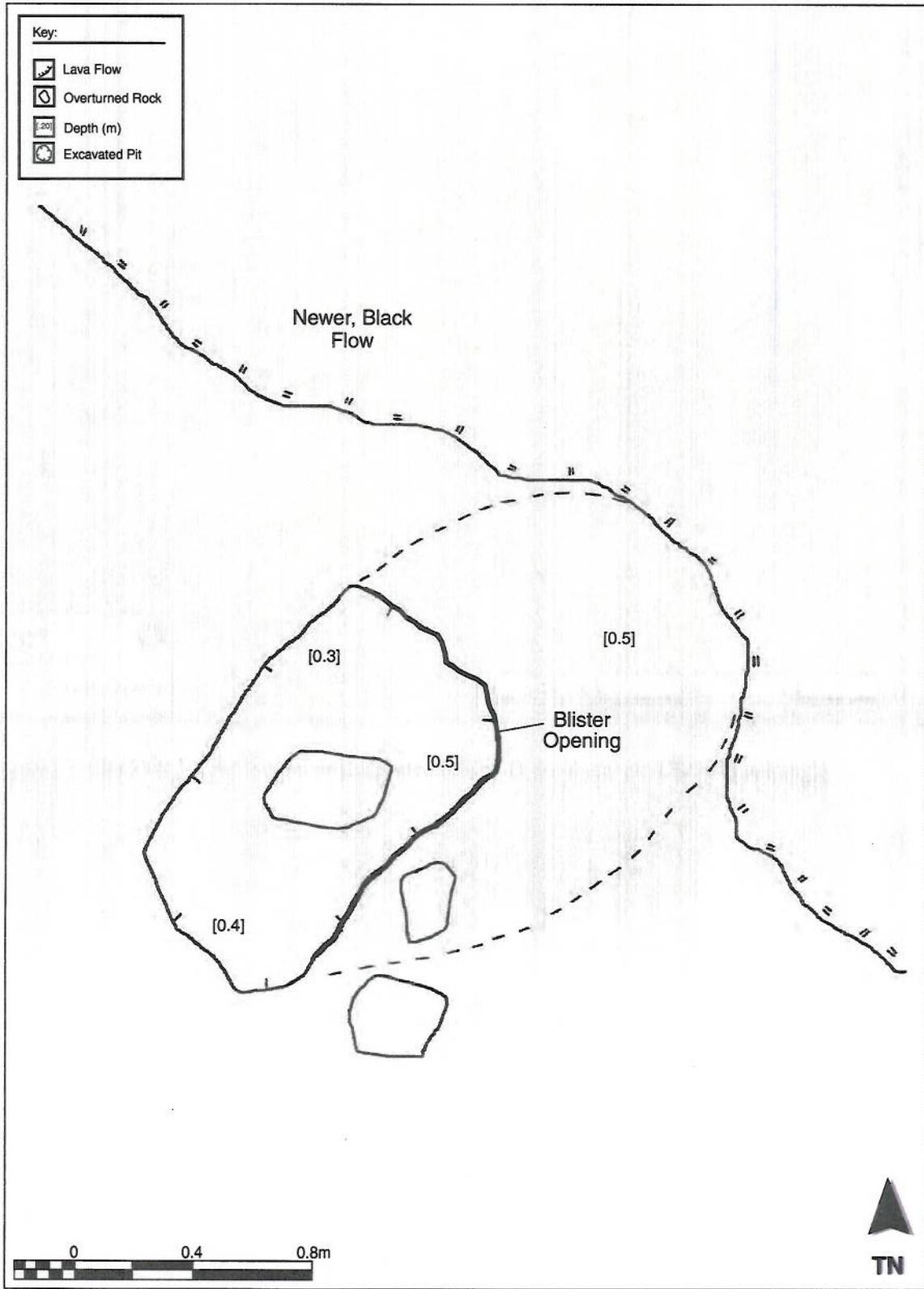


Figure 71. 23463 Feature 11; Plan View

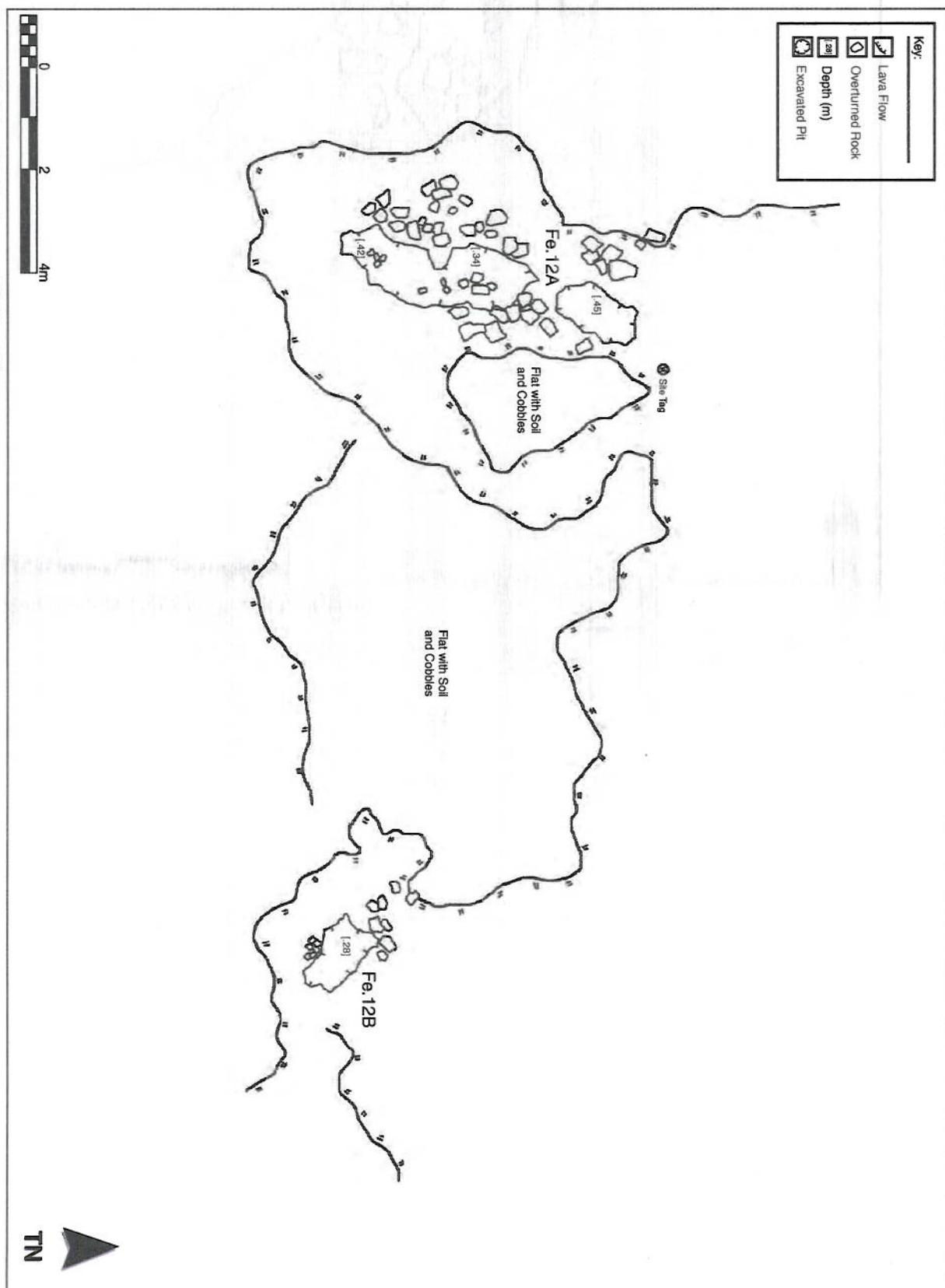


Figure 72. Site 23463 Feature 12; Plan View



Figure 73. Site 23463, Feature 9



Figure 74. Site 23463, Feature 12a

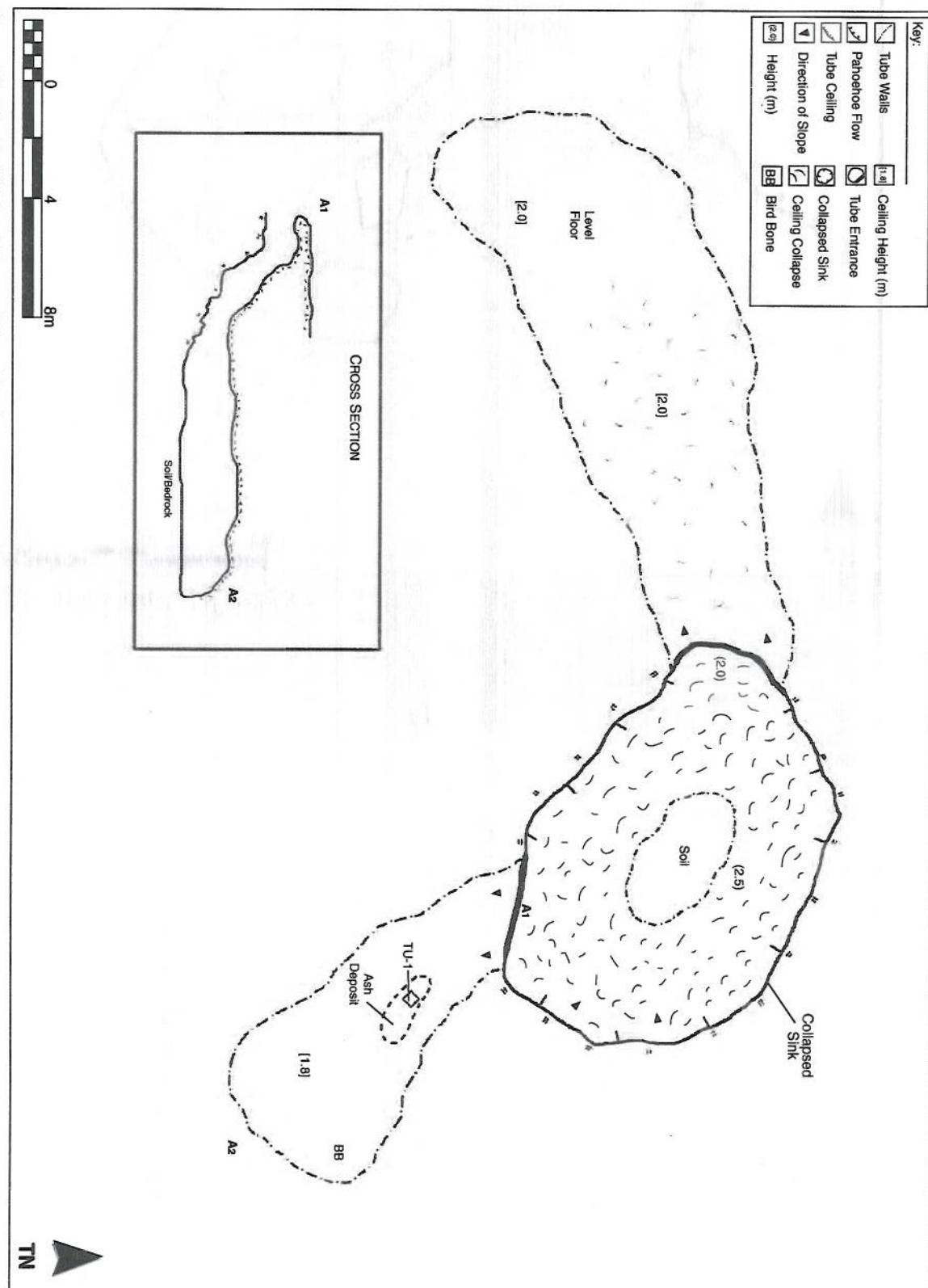


Figure 75. Site 23464 Plan View and Cross Section.